CRYPTOGRAPHIC DATA PROCESSING SYSTEMS, COMPUTER PROGRAM PRODUCTS, AND METHODS OF OPERATING SAME IN WHICH MULTIPLE CRYPTOGRAPHIC EXECUTION UNITS EXECUTE COMMANDS FROM A HOST PROCESSOR IN PARALLEL

ABSTRACT OF THE DISCLOSURE

Embodiments of cryptographic data processing systems, computer program products, and methods of operating same are provided. For example, cryptographic data processing systems include a host processor, a system memory coupled to the host processor, and a cryptographic processor integrated circuit that comprises a local memory. One or more operands are downloaded into the local memory from the system memory and the cryptographic processor executes an instruction that references one of the downloaded operands using a first relative position in the local memory. Operands and results may be packed together in the local memory, which may conserve storage space. In other embodiments, separate command interfaces are provided that are respectively associated with execution units in the cryptographic processor. Commands blocks are respectively provided to the execution units and these command blocks are executed simultaneously by the plurality of execution units. By performing operations in parallel using a plurality of functional units, the total number of operations that may be performed may be increased and the average latency for completing operations may be reduced.